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ABSTRACT

This paper presents two policy issues related to the topic of workforce preparation. While changes in the structures and requirement of jobs in the postwar economy have created a need for a more skilled workforce, at the same time, corporations have become increasingly reluctant to invest in training and education for youth and for their own employees. This study examines how such structural changes affect the skills required of workers and the extent to which firms help develop those skills. The authors conducted case studies to learn the corporate restructuring process, how the process impacted workforce skill levels and development, ways that firms developed the skill levels of their workers, and what the resulting implications are for skill development strategies and public policy. The industries chosen for the study were insurance companies and the medical imaging equipment industry, representing service and manufacturing. Among the study's findings is that employers now hire on the basis of a person's ability to master a set of skills, rather than on the basis of existing skills. The study comes to the conclusion that encouraging community colleges to play a central role in workforce development poses perplexing issues. Demand-driven solutions for low-level workers and overall educational improvement strategies that depend on demand-side drivers may need to be carefully constructed and targeted rather than widely expanded as the natural extension of high school. Contains 55 references. (VF)

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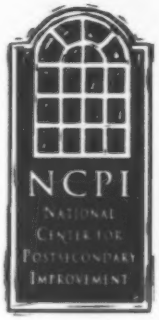

The New Corporate Landscape and Workforce Skills

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"The New Corporate Landscape and Workforce Skills:What Firms Want; How They Get It; and the Role of Education, Training and Community Colleges"

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Introduction

Dramatic changes in the economy and the consequent corporate restructuring are bringing about significant changes in the structure of jobs, skill requirements, and the labor–management social contract developed in the postwar period. A central dilemma in the observed changes is that the need for a more skilled workforce has arisen at the same time that firms are restructuring in ways that reduce their capacity and/or willingness to provide workforce skill development. Two key policy issues are, thus, the extent to which there is a need for workforce skill development and the extent to which firms will engage in training and education for youth and incumbent workers. The extent to which firms engage in workforce skill development is dependent upon an interaction of economic and organizational factors. Thus, an analysis of corporate restructuring and the resulting organizational outcomes and job structures provides the framework for analyzing the role of the firm in workforce skill development.

The economy of the 1990s is generally characterized as one of intense global competition, rapid technological advance, and significant transformation in work practices and firm structure. New job and organizational structures are thought to require greater levels of workforce skill. More generally, it is thought that the best way for both firms and workers to develop a competitive advantage in the global economy is to improve the level of workforce skills (Murnane and Levy, 1997). This perception of an increased need for skills is based on findings of increasing wage returns to education (e.g., Murnane and Levy, 1997; Lerman, 1997; Berman, Bound, and Griliches, 1994). Overall increases in skill and wage inequality appear to have occurred in the early to mid-1980s (Lerman, 1997), with changes since then being less clear. For example, Howell and Wolff (1991) find a compositional shift toward higher-skill occupations in the economy in the 1980s but, more recently, Howell (1997) finds that recent changes have been very small. The changes that appear to have been most significant recently are increased demands for soft skills and basic literacy for the lowest-level jobs (e.g., Moss and Tilly, 1996; Holzer, 1996, on skill changes in jobs requiring high school level education). Thus, existing studies do not provide clear evidence of an overall or significant skills shift in the 1990s because of changes in job content, with the probable exception of requirements for the lowest level jobs (Moss [1997] concludes that existing research may be at too aggregate a level to provide understanding of the impact of restructuring on jobs and skills.).[1]

Whether or not there has been a dramatic shift recently for increased skill, the long-term trends certainly are toward increased workforce skill, and the returns to individuals of skill development are greater than ever before. However, many researchers find a fundamental weakening in the commitment and/or capacity of core institutions to provide that skill. Core firms in the U.S. economy have traditionally had strong internal labor markets that provided opportunities for skill development and advancement, providing training and/or prospects for long-term employment that allowed for on-the-job training and returns to investment in education. Turbulence in labor markets and statements by large

firms that they can no longer provide long-term job security have led many corporate executives, researchers, and policymakers to declare an end to the role of core institutions (firms and governments) in providing workforce development. In a comprehensive analysis of corporate restructuring, Cappelli et al. (1997: 4) find that the breakdown of "traditional methods of managing employees and developing skilled workers inside companies . . . where pressures from product and labor markets are brought inside the organization . . . [establishes] . . . market-mediated employment relationships."

Corporate Restructuring and Organizational Disintegration

Corporate restructuring is multidimensional, a change occurring at the economywide level of corporate form as well as at the firm level in internal job structure. Changes in the market and competitive strategies are significant drivers of changes in job structure and corporate form, though decisions about job structure and corporate structure will shape competitive strategy as well. Historically, firm growth was driven by the expansion of organizational boundaries: first by internalizing ever greater functions and parts of the production process, and then by broadening the scope of the firm's functions, or "focus." This ranged from vertical integration to the expansion of human resource departments, support services, and other direct and indirect activities related to conducting or supporting central lines of business.

The corporate body also grew by the expansion of unrelated businesses integrated into one corporate entity. The conglomeration of businesses was based on various principles of growth, including product complementarity (e.g., various food products which might share distribution channels or company identity), financial complementarity (e.g., acquiring both food markets, which have relatively constant cash flow, and aircraft parts, which are highly cyclical), and financial portfolio management (completely unrelated businesses that could generate a target profit level) based on a premise that strategic financial management was more important for generating profits than operational or business management/knowledge. Because of changes in competition, profit-level expectations, and other factors, there was a shift in company valuation and management principles that led to significant breakups of conglomerates in the 1990s (e.g., see Cappelli et al., 1997; Useem, 1996).

The current transformation goes beyond deconglomeration of a supraorganizational form, extending to the disintegration of the operational organization of the firm. Evidence of this disintegration includes declining average firm size, widespread downsizing and reengineering over the last ten years, and a shift of layoff incidence from blue- to white-collar employees (Farber, 1996; Harrison, 1994). From an economic perspective, the boundaries of the firm are set by the trade-off between transaction costs (incurred when firms buy a good or service from the outside) and the potentially greater efficiency of outside suppliers (Coase, 1937; Williamson, 1975, 1985). From this

perspective, disintegration is driven by a decrease in transaction costs, an increase in the relative efficiency of outside suppliers, or both.

Although there is evidence explaining the inefficiencies of the conglomerate form and thus an explanation for the market pressures pushing the multifirm organizational form to dissolve, the evidence for a shift in environmental pressures driving the disintegration of the firm as an organizational unit is not as clear. An organizational analysis provides insight into an additional set of factors explaining current corporate restructuring. Recent changes in market structure and firm structure have been conceptualized as a "deinstitutionalization" of the firm as an organization consisting of integrated functions (e.g., Davis, Diekmann, and Tinsley, 1994). The process that begins with the conglomeration of firms followed by subsequent "deinstitutionalization," Davis et al. argue, leads to an extension of the deconglomeration logic to the deinstitutionalization of the firm as a coherent organizational body. It is being replaced by networks, the "virtual corporation," and other forms of coordinating production and service, as noted and discussed by a number of researchers (e.g., Powell, 1990; Jarillo, 1993).

This process suggests not only that networks and expanded organizational models have replaced the firm as the key actor, but also that production will occur in structures that are "boundaryless."[2] It is a conceptual shift from viewing entities as organizations to viewing networks or other non-organizational, unbounded structures as the locus of production; the bounded organizational form that previously defined the firm is no longer the only important body for organizing production. By extension, this view would also support the argument that organizational instability implies that firms are less able to support the employment structures and skill development activities and opportunities of the past.

Changes of this magnitude in corporate form would have significant implications for workforce development. From the perspective that skill development is dependent upon functional and workforce integration within an organizational body, organizational changes toward outsourcing and deintegration would diminish firms' skill development/organizational learning capacity (see Lazonick and O'Sullivan, 1997, for related argument about skill development and organizational integration, and Bettis, Bradley, and Hamel, 1992). The overall deinstitutionalization of corporate organization as discussed by Davis et al. (1994), might also be viewed as extending to suborganizational components. Thus, outsourcing and the use of contingent workers, for example, might constitute a deinstitutionalization of an organizational form of discrete firm-level units. Moreover, the deinstitutionalization argument would suggest a conceptual shift in decisions about what should be the inherent composition of the activities of a "firm" beyond specific cost criteria (i.e., a change in the view of the firm as an organizational form with internalized functions).

Thus, we may be entering an era where workers are no longer being provided skill development by their firms, and are also unable to obtain new skills on the job and advance internally. As core firms outsource and increase their use of contingent workers, there exists the potential for further weakening of the core firms' investment in workforce skills. Segments of the workforce that were formerly considered part of the organization are now either located in external supplier firms, often smaller and with less capacity and fewer resources to train, or, in the case of contingent workers, are not considered eligible for training and skill development opportunities. Instead, individuals will be responsible for their own skill development in order to remain "employable," thus facilitating frequent jobs changes as firms continually readjust the size and skill composition of their workforces. These changes in the economy and within the corporation are thought to increase the need for skill but, at the same time, diminish the institutional capacity to develop it.

Investing in Skill Development: Market and Organizational Explanations

The focus of this study is on how structural changes in firms and jobs affect the skills needed and the involvement of firms in skill development efforts. As such, our focus is broader than job training because it includes an examination of how changes may affect formal and informal opportunities for on-the-job learning, linkages with and use of education providers, and, more generally, approaches to workforce development.[3] Although we do not evaluate the relative value of training versus education, we do focus on the broader issue of how firm structure and behavior shape a range of skill development opportunities, and we focus specifically on firms' engagement with postsecondary institutions for training and broader skill development. Our research identifies multiple factors that shape and influence firms' involvement in skill development. Such a multidimensional analysis, we believe, is necessary to answer the dilemmas in the current era of corporate restructuring, succinctly expressed by Lynch (1994) as, "If there is an emerging consensus in the United States that training is necessary for competitiveness, why isn't everyone doing more training?"

The U.S. has one of the least developed structures for skill development of the highly industrialized countries and spends less than other countries on training (cf. Buechtemann and Ludwig, 1996). Examining the early origins of the U.S. approach to production and job structure identifies the historical conditions that continue to define modern approaches. As such, the historical path of development reflects the industrial legacy of Henry Ford, who developed a production model for the assembly of complex products with unskilled, immigrant farm laborers consistent with the principles of industrial organization also developed by Fredrick Taylor. In Ford's system, work skills are not those of craft but of attitude and behavior, which become the focus of education for students who will enter the production and front-line workforce.[4]

The essential features of these systems have defined the interaction between education, job structure, and type of demand expressed by firms—in short, a mutually interacting system of *debased demand* and *debased supply* in which jobs require limited task skills and educational systems provide only basic skills and industrial acculturation rather than occupational skills (for representative discussion of different dimensions of this relationship, see, for example, King, 1996; Lynch, 1994). The historical antecedents of current job structure and technology development have been identified as creating a general bias for technology investment over workforce skill investment (e.g., Salzman, 1992; Salzman and Rosenthal,1994), and for favoring investment in managerial skill development over front-line worker skill development (e.g., Lazonick and O'Sullivan, 1997 and Moss, 1997, for discussion in terms of training and competitive strategy).

An economic explanation of the U.S. system is that the labor market structure in the U.S. inhibits firms from engaging in skill development. Because the fluidity of labor markets permits high labor turnover (i.e., both quits and fires), the free rider problem posed by poaching trained workers from firms that do training leads to a high burden on those firms. The standard theory of firm training is that firms will engage in training when there is a clear return on such an investment (and one that is greater than an investment in capital technology). Thus, one stream of research has been to examine the returns to training and shows substantial returns in terms of productivity and wages (the latter relevant for individuals to invest in training; see Lynch et al., 1996, for review). When returns to training are sufficient, a second barrier is identified as to the ability of firms to realize the potential return on training investment by keeping workers for the "payback period." The problem here is then identified as a free rider problem of nontraining firms poaching trained workers from training firms, thus reducing the ability of training firms to realize the return of their human capital investment (a problem not faced when investing in immobile capital technology). These theories also predict that firms will tend to invest, predominantly—if not only—in specific skills that are not transferable to other employers. General skill training will then be left entirely to the public sector.

Although, or perhaps because, this line of reasoning about market disincentives for training fits neatly with economic theory and has intuitive appeal, there has been surprisingly little research testing the extent to which these factors do, in fact, inhibit firms from workforce skill development (e.g., Cappelli et al. [1997: 126] note that just the problem of measuring general versus specific skills makes "impossible an empirical test of the human capital hypothesis that company training tends predominantly to be company-specific." Stasz (1996) makes a similar point). Thus, there is little research that allows us to examine how significant this barrier might be and the factors that enable firms to overcome it and invest in training.

Factors explaining the training behavior of firms—why firms *do* train—were explored by Scott and Meyer (1994) from an organizational, or institutionalist, perspective. They argue that training programs serve organizational functions beyond direct skill development.

For example, training may be part of an overall trend for firms to expand "membership rights" that include training as a way of career mobility (e.g., as an issue of "fairness" and commitment by the firm to its employees as opposed to an efficient way to obtain needed skills at higher levels) and as a means of having employees internalize the norms of the organization, particularly as job structures move away from direct supervising or control mechanisms. They also note the role of training professionals in expanding their own profession by increasing the acceptance of training in firms as part of a process of developing their own institutional base, as other professional groups have done. This accounts not only for the growth and the development of training that more closely resembles educational models (which would tend to provide more generalizable skills, contrary to market disincentives), but also explains how training becomes institutionalized, so that it is taken for granted as a necessity for organizational legitimacy.

Scott and Meyer make the important point that training should be analyzed in its organizational context, and that it likely has multiple determinants in addition to its technical function of increasing efficiency. Such a multilayered presentation, they argue, can more fully explain the growth of training and the expansion of training to a broader focus on skills that may not contribute directly to efficiency / productivity and that are more transferable (which economic theory would predict *not* to occur).

Using an organizational framework for analysis might provide insight into issues such as the diffusion of training programs as a function of organizational isomorphism, of the way in which imitation influences the prevalence of organizational forms (e.g., DiMaggio and Powell, 1993). Insofar as training is a function of organizational imitation and expansion of the professional interests of trainers, there would be a weak link between structural / economic predictors and the incidence of training.[5] (This could, for example, explain firms that engage in notable training efforts because of a philosophical commitment to training beyond demonstrated returns [such as Motorola] while perhaps overcoming or bearing the financial burden as a cost of doing business). This perspective also provides a framework for an analysis of changes within the firm in the role of human resources and types of training provided (e.g., job structure change might require greater "socialization" for internalization of organizational controls as direct supervision is decreased). An organizational analysis also provides a framework for examining the impact of deinstitutionalization on human resource departments and functions, suggesting, for example, that deinstitutionalization might shrink these drivers of training.

In summary, understanding training and skill development by firms requires a perspective on multiple determinants at the levels of both markets and organizations. Important findings about the extent and types of training provided by firms and received by workers have been provided by the research to date, which has involved surveys and analyses of the incidence and types of training practices by firms and associated organizational variables with rates of training. Little research has been done on how restructuring firms have obtained the workforce skills needed; how they view the need for and are

developing plans for, skill development; and how the internal dynamics of firms, the market environment, and other firm-level factors influence workforce development by firms.

The Case Studies

To better understand the interrelated issues of firm restructuring and skill development we conducted case studies in the service and manufacturing sectors that allowed us to research in-depth the process of corporate restructuring and the implications for skill development strategies. First, we examined the nature of corporate restructuring in order to understand the restructuring process and the subsequent organizational-level changes. At the organizational level we examined the overall business changes including changes in competitive strategy—in organizational form, in job structure, in the "value chain" through factors such as outsourcing—to the extent that it involved changes in workforce skill levels or development mechanisms. Second, we examined the way in which firms developed their workforces to meet whatever changes in skill requirements were needed. Third, we examined the implications for skill development strategies and public policy.

Insurance was chosen as representative of a service industry that employs workers at a broad range of skill levels and that has traditionally had a highly developed internal labor market in which on-the-job learning, supplemented in some functional areas with externally obtained education, offered the potential for significant mobility. It is an industry that has only within the past five years been sharply exposed to economic pressure. It is currently a very dynamic industry undergoing dramatic restructuring both in terms of internal organizational structure and industry structure. In the life insurance market the product itself is undergoing change, as it becomes a financial planning product and is thus in competition with other financial product companies. The case studies focus on the life insurance / financial services lines, although all the firms studied are multiline companies (i.e., they sell other insurance products).

The medical imaging equipment industry was studied as a representative of the manufacturing sector. Medical imaging equipment refers to five basic types of equipment, known as "modalities": X-ray (both conventional and digital radiography), computed tomography (CT), magnetic resonance imaging (MRI), ultrasonic, and nuclear medical instruments. The medical imaging equipment industry was chosen as an example of new, high technology-based manufacturing. Medical imaging is of interest because it is part of a high technology, knowledge-intensive industry that is crossing the boundary between hardware and software, manufacturing and services, and involves very high-skilled work combined with high quality demands for assembly and basic parts manufacturing. It is a global industry with about $12 billion a year in sales. While our case studies involved five companies (including smaller specialty equipment companies),

these findings report on only three of the companies (the other two are still in their initial stages of study). This industry is also of interest because within the past five years it has experienced significant market pressure as a result of increased health care cost containment in most of the industrialized countries and in some of the newly industrializing countries. This has changed an industry that was almost a "cost-plus" business into one that is becoming significantly cost constrained in a relatively short period of time and, in some countries (the U.S. and European common market), subject to increased scrutiny and regulation, further increasing the pressure to improve quality performance (see Tilly and Handel, 1997, for an analysis of this industry and recent changes).

These cases were supplemented by case studies of firms that have actively engaged in significant skill development efforts as a way to better understand the factors that do motivate firms to engage in skill development and, particularly, the use of community colleges. This allowed us to explore cases in which there was a well-developed effort by companies to provide training and education to their workforce through linkages with community colleges, apprenticeship programs, and school-to-work programs.

Findings

The issues addressed in our study are the extent to which firm restructuring is making firms "unstable" in terms of organizational form (losing the capacity to provide skill development for their workforces) and the extent to which job changes (restructuring and/or technology) involve a significant change in skill levels and thus increased demand for skill upgrading of incumbent workers and new entrants. The findings first discussed are the macrolevel structural changes in firms and then the internal job structure changes. We then turn to the implications for training and skills development.

The Dynamics of Corporate Restructuring

Our findings suggest that current "corporate restructuring" actually involves three distinct types of changes in corporate organization and strategy. What is notable about this period of restructuring is that at first it appears to reverse a historical pattern of growth that involved acquisition of other companies and internalization of ever-greater functions and parts of the production process. The companies in the study had developed in a pattern of vertical integration similar to that of much of industry until the late 1980s and 1990s. The insurance companies had also developed multiple lines of insurance as a means of growth and market position (e.g., to be "full service companies"), though they did not integrate various product lines in terms of organizational structure, thus resembling in some ways an insurance conglomerate rather than an integrated single product company.

Each industry, for different reasons, created intense cost pressures that made existing approaches to business less viable. For the medical industry in the early 1990s, cost containment, changes in reimbursement practices, and other factors led to drops in sales and significant declines in profit following a decade of nearly constant double digit growth (Tilly and Handel, 1997). In insurance, deregulation—which allowed more companies to offer a range of financial products—coupled with large investment and underwriting losses (e.g., collapse of real estate markets and a series of casualty losses from hurricanes and earthquakes) and changes in health care, all threatened the viability of the multiline organization of insurance as well as its profitability.[6]

The first stage of corporate restructuring in these industries involves the overall reorganization and/or sale of unrelated businesses or lines to achieve "organizational focus." This ranged from the breakup of diversified conglomerates to the narrowing of product focus of firms within an industry (e.g., reducing the number of lines in a multiline insurance company). The second stage involves improving operational efficiency through downsizing, delayering, outsourcing, and changing jobs in ways such as broad banding, work groups, and increasing workloads. This stage generally does not include significant changes in the nature of job activities.

The first two phases of restructuring—organizational focus and operational efficiency—are consistent with the common characterizations of restructuring. The attributes of these phases have led to predictions of constant turmoil in labor markets, with the end of long-term employment and the rise of "market-mediated" employment relationships. Some of these changes result in initial cost savings and increases in stock values, though not uniformly (see Moss, Salzman, and Tilly 1998, for detailed findings, and American Management Association, 1996, for similar findings). Whether or not these strategies reduced cost and increased stock values, they led to a number of problems as the companies tried to innovate and grow. The first two stages of restructuring efforts were directed at reducing costs and increasing stock values, rather than at strategies for growth (see Porter, 1996, for similar critique).

This third stage of restructuring—for innovation and growth—is one that we suggest is still developing and only in its early stages in companies we observed. Thus, it is too early to have a clear description of the characteristics that will define companies in this stage. The exact forms are still quite varied, and a "dominant form" is probably not yet established. We do, however, postulate that the dynamic in this stage will be oriented toward reconstituting organizational integration, a "reinstitutionalization" of organizational boundaries as important. The importance of this finding that firms will remain coherent organizational entities is that it implies that internal labor markets—and the firm–workforce commitments that are necessary to support these structures—will also be developed, albeit in new forms. The consequences and emerging developments in the firms studied may or may not represent the situation for large numbers of firms; generalizability is always a question in evaluating case studies. However, since the companies we studied are large and influential in their

industries, what they do will be noted and likely imitated if successful or, if not, become object lessons for practices *not* to follow.

Based on our field data across all the firms, we identify a dynamic and focus on innovation and growth in this third stage that is similar in all the firms, though the forms it takes vary. This can be illustrated by some patterns we found in the insurance industry. Each company experienced problems after the initial stages of restructuring to varying degrees, but all were experiencing a distinct shift in organizational restructuring from "focus" and efficiency to innovation and growth.

In one insurance company, for instance, the changes were in organization, product, and customer focus. The firm was redefining the organization from a product-defined organization to a market-defined financial services company, viewing as its competition not only other insurance companies but also financial service companies. The product was being redefined from a set of individual products to an integrated and comprehensive set of financial services and instruments; the customer was shifting from institutions to end buyers (in other words, although the sale was to employers who sponsored an offering to the employees, they were focusing on the individual employees, in order to sell them a series of financial products rather than just the one product that the employer was sponsoring). This involved yet another organizational restructuring (following corporate restructuring involving "downsizing" and "delayering"). To support their new focus on offering a portfolio of financial products to customers, they integrated strategic business units and product lines that traditionally had been separate or were separated as part of the initial restructuring (e.g., annuities and life insurance). This integration created a larger organizational entity and pushed the cost and efficiency evaluation (e.g., individual profit/loss accounting) to a higher level (i.e., to the combined division rather than at the level of product line as done in the previous restructuring). This, they felt, allowed them to focus on product- and customer-based strategies without being hampered by having to focus on microefficiencies of single products or operations.

To support the new organizational structure they began a series of significant changes in their job structure. The effort in this company is to transform one side of the business from an insurance company into a financial services company, involving a thorough set of changes not only in products and business practices but also in organizational culture. Some of the requirements for and initiatives toward innovation in products and selling strategies, however, were hampered by several of the previous efforts to achieve greater efficiency and now required new measures to stabilize the organization.

Similar effects of restructuring stages one and two were also observed in other companies. After a transitional phase of downsizing, selling off business units, and delayering to achieve operational efficiency, the firms began to focus on growth and innovation strategies. This process is leading to re-establishing stability and reintegrating many of the functions that were externalized. Notable are the changes in outsourcing, jobs, and job structure.

Outsourcing and Contingent Workers

A central change in internal organizational structure during the late 1980s and early 1990s has been the increasing use of outsourcing and contingent workers. Both of these represent different dimensions of firms changing their organizational boundaries. The shift to suppliers often represents a shift in the type of workforce used for a function formerly internal to the firm, as does the use of contingent workers. In the initial stages of corporate restructuring, the medical and electronics firms in our study focused almost exclusively on cost reduction through outsourcing and use of contingent workers. The magnitude of outsourcing and contingent workers varied widely across the firms. At one extreme, a firm outsourced 12,000 parts over 18 months after deciding to restructure. In so doing, it eliminated most of its production workforce. Another manufacturer went to contingent workers for about 25 percent of its production workforce. Because these shifts were cost- and "focus-"driven, there was little assessment of the impact on production, service delivery, innovation, quality, or on the remaining workforce.

Examining the impact of outsourcing we found a number of shortcomings that suggest that these strategies may be reaching their limits. In the initial stages of restructuring, the focus was on externalizing formerly internal functions, often for use of the "market" to improve cost and efficiency. That was generally accomplished by using suppliers who provided significantly lower-quality jobs (in terms of both skills and wages) to their workforces and had minimal internal infrastructures (e.g., to track processes and procedures). When going to noncommodity components and larger subsystems, companies found quality suffered because of low workforce skills and lack of infrastructure and procedures to ensure quality. In addition, customers asked for high levels of quality (e.g., changes of several magnitudes, going from rates of defects per thousands of parts produced to rates of defects per million parts produced) and extensive tracking of processes (particularly in the medical industry with regulations requiring process certification).

As the problems of the initial wave of outsourcing became apparent, companies began to require their suppliers to increase quality and implement quality processes and technology. The firms also had to increase their staff to test incoming product from suppliers, increasing their monitoring costs. Many suppliers found they either had to give up the contracts (which a number did) or build up infrastructure resembling that of the outsourcing firm. In some ways, what core firms gained by not having to focus on "production issues" they lost in having to focus on supplier management and, not uncommonly, involvement in developing/managing the supplier's infrastructure and workforce.

In a seeming paradox, as firms sought to innovate, some found that previous outsourcing forced them to expand outsourcing into "strategic" areas. Sometimes companies find that outsourcing is necessary because they have lost essential capabilities during the first stages of restructuring, particularly as outsourcing expanded to all levels of activities. One company had become so "lean" in an engineering area that, for

a new project, it did not have the engineering capabilities to undertake the necessary work and was forced to outsource it. Another company that also became very lean in its engineering staff found that innovation slowed; it belatedly recognized that a source of innovation had been "under-the-bench" work—projects engineers did on their own or as an expansion of an immediate, more narrowly defined project. Whereas innovations had previously emerged from the engineering workforce, the company now increasingly had to look outside the organization.

The outcome of this third restructuring stage is a change toward rebuilding stable organizations. As a result of outsourcing and deintegration of noncore functions, these new organizational forms would tend to be occupationally—or at least functionally—more homogeneous organizations than they were before the first and second restructuring stages. (They may not be more homogeneous in skill or pay levels because, for example, the elimination of highly-paid manufacturing jobs could be accompanied by an increase in support staff for engineering, of clerical workers to track contingent workers, suppliers, etc.). There is also a move back to organizational integration through "insourcing," reducing the number of suppliers, and expanding the permanent workforce. (The "insourcing" observed tended to be re-integration of areas that were considered "strategic" and/or fit with other functions maintained, such as an engineering function but not the production area.) In the third restructuring stage, growth strategies of firms usually involved *organizational* growth and often shrinking of extra-organizational linkages (e.g., suppliers).

The impact of outsourcing was primarily to *relocate* production activity—not transform it. For simple commodity parts, such as screws, the production activity that was formerly inside the original equipment manufacturer (OEM) was now in another firm that might specialize in producing that part. Depending upon the product, it might be a large, high-volume company or a smaller supplier. One activity we examined was part stocking for final assembly. This involved obtaining piece parts and stocking them on the shopfloor into bins where they can be used by workers doing the final assembly of the product. The supplier now did the ordering from the manufacturer, maintained inventory, then shipped them to the OEM and stocked the bins on the factory floor. The stocking job did not change in content but the supplier was paying lower wages than what the OEM paid when it hired its own employees to do stocking. It did separate and isolate this activity so that there were no immediate advancement opportunities for the stockers (either within their own supplier or within the OEM since other, incrementally more advanced jobs in the OEM had also been outsourced). Similarly, in other activities we examined, the jobs for parts production process did not change in skill content. However, in some cases they went to smaller suppliers and it required some increase in task complexity for workers there. This increase might be minimal—such as documenting procedures or learning a more complex machining operation—or it might require more training to learn statistical process control or other quality procedures.

We could find no consistent pattern of skills impact or training strategies within suppliers. One supplier, for example, had to expand production and implement new quality processes. The firm sent a supervisor to a community college to learn quality procedures and it expanded its machining capacity by hiring a woman who had lost her job as a cashier when a local food store closed. She was given several weeks of on-the-job training and then began production work on a computer numerical controlled (CNC) machine. Smaller suppliers we visited did not develop a skill development strategy but instead responded to specific requests for a quality procedure and hired workers as needed to meet the specific and immediate requirements of their contract. Smaller suppliers did not view their contracts with the OEM as an opportunity or a need for a broad-based skill development requirement. Instead, they scrambled and cobbled together whatever patchwork of hiring, learning, and trial by error they thought would suffice. Little that could be termed systematic workforce skill development was observed though there was often significant management learning.

Contingent Workers

Use of contingent workers is also being reconsidered in some of these companies. In nearly all instances, managers found that using contingent workers hindered some aspect of efficiency, skill development, and overall workplace climate. Contingent workers had higher turnover, fewer skills, and less organization-specific knowledge. Moreover, the firms were less likely to invest in training for contingent workers while having to provide more basic orientation because of higher turnover. Production and service quality was considered lower, requiring more supervision and more rework. In other companies the use of contingent workers created a second-class workforce which, it was often felt, created divisions in the workforce and lowered morale and/or hampered integration of contingent workers as equal participants in the work (e.g., in assignment of work tasks, learning opportunities, etc.).

Although contingent workers reduced permanent headcount (a performance measure in some firms and on Wall Street) and made layoffs easier, managers seldom seemed to think that *overall* costs were reduced. Although the direct wage bill might be less than when using permanent workers, managers identified other costs that were higher but not accounted for in formal assessments of contingent worker cost savings (and thus the managers were not able to provide exact numbers; but see Doeringer, et al. [1991: Chapter 7] for a number of measures reported in a survey). For example, contingent workers required more orientation training and still required indirect personnel costs to administer contracts with the employment agency, which required maintaining the support capacity of permanent workers (e.g., supervisory capacity to provide training and oversight; administrative capacity to administer the contracts, etc.).

Contingent workers were useful in performing narrowly defined tasks but not in contributing to the broader scope of organizational performance that firms in the third

stage were trying to make part of all jobs. The firms used contingent workers as its "disposable workforce" that it could easily hire/fire, and the contingent workers reciprocated in attitude and behavior. One manager commented that contingent workers would go across the street for 10 cents an hour more whereas their permanent workers would stay because of the long-term opportunities at the firm (e.g., in one production facility contingent workers had turnover approaching 50 percent as compared to under 10 percent for their permanent workforce). Because of the headcount limits that motivated the use of contingent workers, these workers were not eligible for the ongoing training and education benefits that support skill development through the firm, shrinking the pool of internal candidates for advancement. Even in production areas, collaboration, sense of purpose, and team *esprit de corps* were hampered when there were workforce divisions.

Both outsourcing and the use of contingent workers are attempts to redraw the organizational boundary for a variety of reasons. In both cases there are areas where externalizing the activity could be done with little change and/or which were easily divisible and not "strategic" (e.g., security, custodial services, cafeteria), but often once outsourcing or use of contingent workers becomes a "strategy," it expands throughout the firm. Our findings suggest that as firms move toward innovation and growth, significant outsourcing and use of contingent workers become inhibiting factors.

Apparent in these case studies is that the companies are not engaged in significant levels of skill development for their lower-skilled workers. In fact, the result of most the restructuring strategies in the core firms has been to shift the emphasis on what is considered important or "value-added" activity to a higher level (namely management functions or coordinating functions such as contracting and managing outsourcing rather than production activities). One of the organizational benefits of outsourcing, for example, was to achieve tighter "focus" (in fact, our findings suggest that this is a greater benefit than specific cost reductions which are often not evident) by eliminating or greatly reducing a class of activity from within the boundaries of the organization. In so doing, many of the firms then considered the remaining activities insignificant and not worthy of attention. As one manager said when asked if he was concerned about front-line worker skills, "Look, only 5 percent of our costs are in manufacturing and only 2 percent are labor—why spend any attention on those jobs?! We just use a temp agency to hire them, let the agency provide the two weeks training required, and then we hire permanently the best. The area we're concerned about is the people skills for managers and some technical areas." He went on to say that the most value from HR is to improve its selection of managerial talent. This was a view echoed in one way or another, explicitly or implicitly, by nearly all the HR people we interviewed.

The situation is obviously different for the suppliers to whom the work is being outsourced and who have a high percentage of their costs in direct labor. We did not study suppliers to the same extent as we did OEMs but, as discussed above, the suppliers

we did study were not greatly concerned about skills. The reasons were a combination of taking "low road" approaches (e.g., hiring former grocery store cashiers rather than skilled machinists), limited infrastructure such as not having HR personnel to support skills development or even to focus attention on that area (vs. any number of other problems in production), having only incremental perceived skill improvement needs (e.g., only one or two new hires might be needed, a goal which was better served by an extensive search through informal networks rather than formal training), and focus on "systems" for quality and manufacturing which depended on supervisory skill rather than direct worker skill. In several cases our discussion about workforce skill raised the issue in a way that they did not seem to have considered previously, or did not consider seriously in our discussion with them about it. As discussed earlier in this paper, one explanation for training is that it is the result of the HR organization furthering its inherent objectives and is a part of organizational citizenship or legitimacy rather than a direct reflection of a perceived front-line need. Absent HR personnel, workforce development may be placed outside the frame of reference for small suppliers who are struggling with many issues, improvements in any number of which will improve firm performance.

Changes in the insurance industry involved some transformation of the lower-level jobs but not, as far as we could observe, in ways that led to significant formal skill increases. That is, from what we observed and most managers confirmed, a traditionally "good" high school education would be sufficient but they felt the pool of well-qualified high school graduates was too small and/or it was too difficult to identify them in a screening process. The result was to shift the educational qualifications required upwards, often more for the "filtering" that was provided than for the content of the education.

The firms in the insurance and medical equipment industries did not engage in significant skill development of lower-level workers and did not engage in significant skill development activities with community colleges. To understand engagement in skill development of lower-skilled workers and with community colleges, we studied a sample of firms that had programs with colleges.

Job Structure and Skills

In the first two stages of restructuring, job changes tend to focus on ways of increasing productivity without "deep" structural changes in the organization of work. Job expansion tends to be horizontal, expanding the number of tasks in a given job at the same level. Other changes often streamline processes to increase output and reduce labor requirements without significantly changing job structures. As companies begin to develop competitive strategies in the third stage, some find that conceptually new job structures are necessary. The resulting redesign of jobs into broad functional categories and the elimination of a finely graded hierarchy presents new opportunities and new barriers: the

skill barriers to entry are greater and the gaps between job functions are greater, but skill development and responsibilities as well as wage progression are also much greater within each broad functional area.

One company, for example, has eliminated specific job descriptions and instead defined broad functional area responsibilities (e.g., "customer associate" which encompasses the responsibilities of what were previously about six discrete jobs). In doing this they went from 7,000 separate job descriptions/classifications to 2,000. Workers no longer enter a vertical career ladder but enter into a job that encompasses a number of functions. "Advancement" involves increased mastery of "competencies" rather than specific task learning.

Hiring criteria are no longer based on an assessment of a person's ability to perform a particular function or set of task skills but rather on an assessment of his or her ability to master a host of skills and responsibilities. Advancement is not viewed as a hierarchical rise through the ranks but expansion of skills for a broadly defined function. In creating these broad functional areas, gaps between areas have increased and internal advancement across areas will probably be more difficult, requiring additional formal education and training outside of the firm rather than internal, incremental advancement. In large firms, low-level jobs may have the possibility of relatively higher levels of skill and wage development than in the past but fewer opportunities to make an internal progression to middle-level jobs without external education and training.

To the extent that this type of restructuring occurs throughout industry, it suggests an increase in the entry-level skills required at even the lowest level (or a shift to hiring at a different level, such as four-year college graduates instead of high school graduates) but potentially greater skill and wage development within formerly low-level jobs. That is, firms in our study are moving to eliminate finely divided work and eliminate even their lowest level of jobs. The impact on wage and skill structure is potentially the development of a series of barriers and "gaps" at certain points along the distribution, that is, a discontinuous set of steps rather than a smooth continuum. At the lower skill level of the workforce, those who make the initial hurdle—even without high formal education—will find relatively good wage and skill progression. Those who are unable to make the initial hurdle will have fewer opportunities. There will, however, be a second barrier: the progression to jobs at the *middle* level of skills and wages. Entry to these jobs will be increasingly based on formal education and training that is not possible to obtain through internal training and learning on the job. In the industries we studied, all mid-skill and mid-wage jobs—with the notable exception of technical specialties—required four-year degrees. The result is that there is likely to be a widening of the gap between lower- and middle-level jobs.

Work Content

An important consequence of the work redefinition and the elimination of task-defined jobs is that organization-specific knowledge will become more important. Thus, one finding is that workforce retention and longer tenure are becoming more important, not less, in these firms. Firms are trying to develop mechanisms for increasing job attachment rather than providing for high turnover, and are developing mechanisms to increase employment transitions; the downsizing and workforce reductions may have been a consequence of a transitional phase in a firm's restructuring but do not appear sustainable as a permanent feature of its future functioning.

Job structure and skills requirements are changing, as companies move their focus from operational efficiency alone to innovation and growth strategies. The commonly discussed increase in skills due to broadening job structure and increased levels of performance has occurred. What we find is that much of the change is organizationally driven (e.g., by use of teams, cross-selling, multiple service responsibilities), with technology as a supporting but not a driving factor. The major skill needs/selection criteria identified in our interviews are for "soft" skills for lower-level employees and leadership/managerial skills for professional/managerial-level employees.

Most of the technology-related changes in insurance and medical equipment production require basic computer literacy rather than high-level computer skills (e.g., familiarity with Windows, word processing and spreadsheets, perhaps basic graphing functions for statistical process control). We did not find instances where these technology-related skills were viewed as significant barriers to finding new workers. For incumbent workers, technological change generally required only marginal skill shifts.[7] The reasons for layoffs in the reorganization were usually lower performance ratings in a group that was mandated to reduce its workforce (e.g., layoffs of the lowest-rated 10, 20, or 30 percent of the workforce in an area).

Sometimes there was a skills shift involving higher basic skills. Cross-selling in insurance, for example, requires agents to have a securities license and thus involves passing a test that includes basic mathematical knowledge and aptitude. The skills reported as lacking were "soft" skills of teamwork, communication, willingness to learn, and related skills and characteristics. Often, the skills shift represented a compositional shift in occupations as work was reorganized. Eliminating highly divided tasks in insurance in some cases meant that the high school-level jobs were reduced or eliminated and that there was an expansion of college-level jobs. This compositional shift of occupations meant that they were hiring from a different pool of applicants, often defined by formal educational credentials.

Companies That DO Engage in Skill Development of Lower-Skilled Workers

The motivating issue in this study, as discussed, is understanding firms' skill demand and the actions they take to engage in skill development. We focus on the development of capabilities that are relatively broad and durable as opposed to very specific training (see above for discussion of training, skill, and education). Although this is a distinction that is not easily defined, we used selection criteria such as the extent of involvement by the firm with the community college and the type of education/training provided (i.e., ongoing and broader than specific training courses in, for example, statistical process control). Many firm-community college linkages for specific worker training exist but our interest, similar to that argued by, for example, King (1996), Luria (1997), and Streeck (1991), is in skill development that involves the educational mission of the college as opposed to a more specific task training—that is, the type of skill development that is durable and more likely to contribute to sustained employment and productivity.

Many companies *are* involved with educational institutions, as evidenced by the growth of school-to-work programs and the increased use of community colleges for training (Bassi and Van Buren [1998] report that over 40 percent of firms use community colleges as at least one of their training providers). A recent study on employer participation in school-to-work efforts (Bailey, et. al, 1998) finds "that the most important motivation for participation is philanthropic" (e.g., as community service, to improve public education) rather than as a means to address a workforce skills need. Similarly, as discussed above, Scott and Meyer (1994) find that some training is motivated by human resource personnel in ways that do not directly address line needs. (In a number of companies we also found HR course offerings that line workers and even other HR personnel derided as "dress for success" courses, with no demonstrable payback to business performance in their area and thus unable to justify to line managers. With the decentralization of human resource functions, HR budgets had to be funded and justified within smaller business units rather than coming from corporate level funding) Given our focus on the skill demand by firms, we also wanted to study programs that were addressing skill development as motivated by line personnel.

Electronics Technicians

A highly developed education and training program between an electronics equipment manufacturer and a community college was an exemplary program we examined (we discuss one case study in detail here, although the analysis and conclusions draw on interviews with four other companies involved in community college programs). The firm had started an internal electronics technician training program several years ago. The firm moved some offices, faced some space constraints, and wanted to expand the training program. The firm was also concerned about costs and the possible poaching of its trainees by competing firms. For these reasons it approached the local community college about locating its program at the community college with the firm paying for

nearly all the direct costs (teachers, equipment, administrative personnel, etc.) and paying educational costs and fees for the students. Managers at the firm stated a number of reasons for forming this alliance with the college, including the desire to embed the training program in a broader education program, to enlist the participation of other firms, to minimize or prevent poaching, and to externalize costs.

The program was unique at the college in terms of the depth of education and training it offered and the strong support provided by the firm. The firm had developed a curriculum and qualifying tests that the community college used. The degree chosen for the program (from a number of possible electronics technician degrees the college offered) was one of the more rigorous available and had higher credit requirements than the other technician degrees.

Why Broad-Based Education/Training?

As noted above, this program was unique in the college in both the level of involvement by the firm and the rigor and breadth of the curriculum. What motivated the firm to develop and support such an extensive and expensive approach to skill development? There were multiple reasons particular to both the company and the industry. In this industry several coincidental events occurred. Approximately four to eight years ago, a series of industrywide reorganizations led to many companies downsizing and projecting flat or declining employment growth in these technical areas. The technicians had traditionally obtained their skills over many years on the job, often with initial training in the military. Because of stagnant employment levels over a number of years, the age of the workforce was very old. Over the past few years there have been additional downsizings and retirements but the industry has continued to grow and the demand for technicians increased manyfold. At the same time, the technology changed, requiring more formal electronics knowledge. High turnover, particularly in field jobs where extensive travel was required, meant that a steady flow of entrants was needed.

These technical and employment requirements coincided with the interest in workforce development of a key executive in the company. Inspired by the European systems of skill development, this executive initiated a program to develop more extensive training programs within the company. This high-level support (particularly financial)—coupled with a pressing need for technical talent that was difficult to find in the market--led midlevel managers to reluctantly agree to support this program.

Why the Community College?

Both the company and the college faculty and administrators participating in this program noted the level of support and involvement by the college as uncommon. An important factor was the commitment of the president of the college to improving their tie to business and the willingness of this company to make a significant investment.

(The college had other programs with firms but these tended to be much more limited in both corporate involvement and in the scope of education/training.) The college's program staff also had a strong commitment to serving the mission of workforce development.

Athough the program was located in the vocational training/technical division of the college, there was an attempt to increase its integration with the general education programs in the college. For example, teachers from the English department were hired to teach basic literacy skills and technical writing to the technical school students. The technical program administrators wanted to see more integration between the two divisions and have more cross-enrollment. Some faculty from the general education programs were said to be resistant to movement in this direction and did not want to tailor programs to the needs of industry. One of the technical school administrators described her efforts to have the general education English faculty make their courses more relevant and applied for the technical program students. She asks:

> Why not have them write about careers for their writing classes? What about reading articles about companies? Say, reading about a company like Motorola [not a company involved with this college] instead of the classics? This divided the faculty; some said that reading about Motorola did not compare with reading *Oedipus Rex*. But it does teach the same competencies.

In assessing content for technical education courses, the college surveyed companies in the college's geographic area. Eight of ten companies said communications skills, oral and written, were most important. They cited social skills such as those that would promote team work. Critical thinking and problem solving skills were also noted. They had an advisory committee to develop requirements for these skills in the program but remarked that it was difficult to balance these soft skills with education for more specific skills.

The college found that recruitment of students into these technical and vocational programs was difficult. Students, particularly when encouraged by their parents, wanted to pursue the general education track as a way of preparing to transfer to a four-year college. They also found it difficult to keep students throughout an entire program. Often, in high-demand technical areas, as soon as the students obtained some skills industry would hire them to work full time. This created a problem for the college because the state had changed its budgeting method from a formula based on student FTEs to one based on the number of students reaching defined "completion points." In addition, the state had established statewide credit standards for each degree that required this college to reduce the number of required credit hours for many of the degrees. The state felt that colleges were inflating degree requirements and enrollments to increase their budgets.

Is This a Model for Firm-Community College Linkages?

Clearly this program is exemplary for providing broad-based skills and significant firm support and commitment to the college and workforce development. The performance of graduates from this program was significantly higher than those coming from other sources (technical training institutes or other companies). Because of the depth of training and the work experience during the program, graduates worked at nearly full performance within the first month of employment. By comparison, managers estimated that it took six to eight months for the best of the other new entrants to work at full productivity.

In the initial stages, the corporate office supported this program, but planned to move the program to the business areas that hired the graduates. It would be up to the managers of each area to decide whether it was cost-effective to support the program. In interviews with one manager, we reviewed the costs and it was not clear that it would be cost-effective to support the program given short-term financial and budgeting procedures. That is, the per student cost of supporting the program far exceeded the productivity loss in the first six to eight months by nonprogram entrants. Yet over the long term, the college program workers might show further benefits in productivity, quality, retrainability, and other tangible and nontangible returns. Part of the problem may have been in the accounting stream, but part of the problem also rested in how they assessed the "value" contributed by workers with a deeper and broader skill base, and the fact that much of it was subjective (e.g., better service to customers above an acceptable level of satisfaction—since the company provided a high level of service, what is the added value increment of a "highly" satisfied versus a "very" satisfied customer?)

The long-term viability of the program appeared to be the extent to which it could be "institutionalized" in the company so that managers believed it had value. Although attempts to document the value might be helpful, our assessment is that it ultimately would require a conviction that it provided value in ways that couldn't be captured in the standard accounting system. In addition, to the extent that the community college shouldered a greater proportion of the cost, the cost to the company would be reduced and perhaps more justified. The company and the college were trying to enlist other firms with similar skill needs to participate in the program but were not meeting with much success. (One other firm liked the idea but wanted the public relations value from such a program so it set up its own program with a community college in another area; one indication that, like the school-to-work programs, the "philanthropic" value of these programs is an important motivator and, surprisingly, can act as inhibitor to creating critical mass.)

Our findings show a mixed picture in terms of investment in front-line worker skill development. Some firms are starting to rethink the initial employment strategies of low job tenure/high turnover, of using temporary workers, and even skill development

strategies to "buy" skill, but some firms are also focusing on competitive strategies that depend less on front-line workers, developing competitive strategies around marketing and finance, and responding to short-term pressures to maintain and improve stock prices. Although the latter strategies may be limited (or at least not successful if pursued to the exclusion of job and skill development strategies that lead to innovation, quality, and timeliness in their product and service), the evidence on this point is not unequivocal. Thus, it is not clear the extent to which firms will sustain long-term or "deep" skill development once an initial workforce skills "upgrade" or shift in occupational composition is complete. Our findings suggest that although skill requirements of jobs have increased, the increased supply of more-educated workers, coupled with a number of countervailing factors within firms and in the market, suggest low levels of internal and market pressure for firms to increase support or investment in skills development. Whether firms will want to use community colleges as part of a broad workforce skills development system is questionable. Rather, many firms may look to community colleges to provide remedial and "filtering" services, some technical specialties, and spot training (cf. Zemsky, 1998, on the transformation of higher education into mass education and the implications for increased stratification of higher education; see Gumport and Pusser, 1997, on the problems of positioning higher education for "the market"). This may be an appropriate role for community colleges but, for many of the colleges, emphasis on this role may begin or raise the tension between the academic/transfer function and the vocational education/training functions of these colleges.

Restructuring and the Dynamics of Skill Development

The case studies reveal the ongoing dynamics of corporate restructuring leading to new stages that place pressure on firms to develop in a direction different from that of the earlier restructuring stages. First, the expectation that firms are becoming fundamentally unstable as organizations (i.e., in terms of functions, size, form, and technology) is the central premise underlying expectations of high labor market mobility, short tenure, and constant changes in skill needs by firms. Our findings suggest instead that instability associated with restructuring represents a transitional stage and that firms "reinstitutionalize" as more stable organizations and seek to build stable, albeit changed, employment relationships (see Salzman, 1998; Moss, Salzman, Tilly, 1998).

Secondly, as firms change organizational form they are also changing job structure to support new competitive strategies. The changes in job structure, we find, are fundamentally organizational changes designed to deliver services or produce goods differently; although they often require new technology in a supportive role, technology tends *not* to be the driver of job structure change nor the most important factor defining the changes. Thus, often there is not a dramatic change in the "hard" technical skills needed but there is a change in what is assessed as the capacity for learning

(e.g., the ability to acquire multiple job skills through training and/or on-the-job learning) and soft skills and development of social "character" attributes.

These findings, along with those of many other studies, would suggest that firms should be very concerned about improved skill development. Our findings about internal labor market and organizational restabilization and the innovation and growth strategies of firms should also indicate that firms are interested in—and have the capacity to engage in—greater skill development. Yet, we find that although firms report a shift to a higher workforce skill composition, they are not engaging in significantly greater skill development of lower-tier and production workers than in the past. This poses an apparent contradiction between the genesis of much recent U.S. policy—which is based on the contention that American employees are underskilled and that U.S. firms need to upgrade their skill levels—and the behavior of firms who are not investing in skill development or significantly greater training to upgrade workforce skills.

This apparent contradiction can be explained at least in part by two broad factors: the organizational context of the skills shift and the dynamics of skill development. First, as noted, the significant skill change tends to be compositional: through outsourcing, job restructuring, and/or work process restructuring, lower-level jobs within the core firm are eliminated so that the remaining skills mix shifts upward (although those lower-skilled jobs may still be part of the overall value chain, just located in another organization). The workforce shift is often accomplished through retention of higher-skilled workers and achieved through hiring higher-skilled workers when there was higher unemployment (often as a result of industrywide downsizing). Additionally, the new skill needs reflect a change that may make some of the *incumbent* workforce skills-deficient but not necessarily reflect a skills shortage in the labor market (e.g., skills deficits reflecting both previous hiring from a different pool of workers and inadequacies in education and training from previous decades).

Analysis of the organizational context of the skills shifts suggests that three factors influence the impact that the observed increase in skill requirements actually has on firm skill development strategies:

> (1) Firms have, by and large, been able to find workers at the level needed, within their existing workforce (reduced in the restructuring) and in the labor market, though they may be recruiting from a pool of workers different from that of the past.
>
> (2) The compositional shift in the workforce establishes hiring criteria at a level where skill development is at least adequate and often more than adequate for the tasks (e.g., abandoning the idea of finding qualifications at a subbaccalaureate level because of the wide variability of both hard and soft skills at that level and the difficulty of selection leads to targeting an applicant

pool that, on average, has higher technical skills than required and that has a higher probability of having the soft skills needed). Thus, firms may be interested in increasing rates of postsecondary attendance and completion, but less interested in the content of the specific education and skill development at the postsecondary level.[8] For example, in one insurance company they said they only hired new entrants with four-year college degrees because "if they get through four years of college they must have some persistence and learning ability." That is, they could be expected to have good work habits, have some minimal levels of basic skills, and be able to learn on the job; employers were not concerned with the content of workers' education.

(3) Skill shifts are often very gradual, involving only a few hires at a time. Thus, the magnitude of the problem tends to be seen as minimal, even if chronic. When there is a significant shift or change that requires a large number of new hires, it is viewed as—and usually is—an episodic event. A sudden expansion of capacity, a new plant opening, or a relocation are generally not ongoing events and often occur with relatively short notice. Thus, a long-term investment for skill development is not viewed as meeting the immediate and short-lived problem. When hiring is constant it is often viewed as a problem of turnover and thus the focus is on retention rather than development of the hiring pool.

The second area of explanation involves the dynamics of skill development within the firm and the countervailing factors to investing in skill development, even if skill deficits are recognized. From the human resource manager's perspective, skill development represents a competitive strategy that reflects the core concern of the human resources area. For line managers, however, workforce skill is but one factor in a portfolio of competitive strategies and production or service delivery deficits. Operations-level factors may include quality systems, inventory management, scheduling, or a host of other factors, of which workforce skill is only one and, often from the line manager's perspective, one that has the less predictable and less immediate payback. Although some of these processes require training, it is often minimal, can be done on the job, and overall the barriers to learning new methods are not seen as consequential.

From the perspective of others in the firm, workforce skill at the front line is only one competitive strategy. Improvements in marketing, finance, and other areas can provide the basis for highly successful competitive strategies. Although some would say that not investing in front-line workforce skill development is a short-sighted competitive strategy, the evidence supporting this position is mixed at best. In the medical equipment industry we found that superior product quality, engineering, and performance often led to second-best market sales, behind firms that had superior financing and marketing.

Finally, when evaluating a firm's competitive strategy, it is important to recognize the influence of Wall Street's valuation of the company. Production or front-line level

returns to investment in human resource development are often not part of Wall Street performance measures; because these performance measures drive managerial decision-making, these measures place constraints on expenditures for longer-term investment in human resources. For example, one firm that had used a minimum of 45 contingent workers for the previous five years would not increase its employment of permanent workers. It reported that although it found contingent workers less productive than permanent employees, and that the company would not invest in significant skills development of contingent workers, the firm's performance on one measure, "sales per employee," *did* improve because contingent workers are not counted in the equation. Thus, whatever losses in production efficiency and quality it suffered on the shopfloor it made up in its stock price on Wall Street. External pressures such as these, we found, can encourage firms to cut their workforces beyond operational requirements and inhibit investment in workforce skill development.

In summary, in the third stage of restructuring we find that firms' competitive strategies are more dependent upon human resource development than in the first two stages of restructuring. That is, the business strategies for innovation and growth are more dependent upon a supporting human resource strategy to develop and retain skilled workers and to foster innovation activity by workers. (This often represents a shift in human resource activities, which are traditionally viewed as peripheral to implementing business strategy.) At the same time, the consequences of the first two stages of restructuring impede human resource development (e.g., terms of skill development and retention).

Skill Development and the Role of Community Colleges

An often-stated position is that the supply side—educational institutions—needs to be more responsive to the demand side—business. Community colleges appear to be an obvious candidate for an institution that can be reshaped to meet the workforce needs of firms as an American version of a skill development system. Exemplary cases of firm and community college linkages provide examples of how this might be successfully done. However, exemplary cases may be thus because they are the exceptions.

Key to much of the focus on school-to-work and using community colleges as a skill development system is the notion that educational institutions need to respond to the articulated needs of the demand side. Our analysis of actual demand-side needs—needs defined by job requirements and structure and the role of lower-skilled workers in the firm—suggests that a close linkage between the colleges and firms may not produce the deeper skills some suggest are necessary for long-term competitiveness. That is, to the extent that firms focus on educational content, they will define their needs narrowly: to the extent that they look to colleges to "filter" the entrant labor pool and do remedial education—that is, postsecondary education that serves a function independent of

content—organizational dynamics of the colleges may orient them toward retention, "completion points," and graduation rates only loosely tied to performance, much like the evolution of some high school improvement initiatives of the past decade. Ironically, one of the reasons community colleges seem like an ideal candidate for deepening and broadening the skill base of the workforce is their broader focus on skill which in turn is due to their dual educational mission modeled at least in part on four-year colleges.

In conclusion, encouraging community colleges to play a central part of a workforce development system poses perplexing issues. Increasing education levels within the present structures and closer ties to the "demand side" are not an obvious solution (cf. Zemsky, 1998; Hamilton, 1997) and could have contradictory outcomes in terms of skills and educational quality. Increased levels of education may very well be desired for intrinsic reasons; and the public interest in education is, as always, justified. Significant increases in corporate training and investment in lower-level workers is unlikely—training at this level does not have returns that are broadly justifiable vis-à-vis other factors. In short, demand-driven solutions for low-level workers and overall educational improvement strategies that depend on demand-side drivers/involvement may need to be carefully constructed and targeted rather than widely expanded as the natural extension of high school.

Endnotes

1. Moss (1997), in a comprehensive review of the research, concludes that basic skills requirements have increased (e.g., inventory requires numeracy; janitorial work requires literacy to understand hazardous material handling instructions) but in terms of advanced skill, "there is no evidence of any really noticeable increase in skills or training needed to get a job and no evidence of any sizeable increase in training obtained while on the job." Moreover, because "training is concentrated among the top professions, the most educated, and most experienced workers . . . one might argue that, on average, less training was provided to most workers." Useem (1996) reviews the research and concludes that training investments have increased, motivated by restructuring. The training was focused on more experienced and educated employees and it declined for less-experienced, less-educated workers.

The extent to which factors such as technology and job complexity explain the increase in wage premium versus the changes in institutional factors that lowered the wages for less skilled workers has been questioned (e.g., Howell, 1997; Moss, 1997). In his excellent review, Moss (1997) argues that, "Taken as a whole, the studies that attempt to look directly at skill changes indicate that skill demands appear to be increasing, but not at the pace suggested by the statistical literature that infers skill changes, not at a pace commensurate with the importance placed upon it by economists explaining the worsening earnings distribution, and not in a way that is so concentrated on computer use as the technological change argument would require." Thus, although the demand for more educated workers has increased, Moss argues that analysis of changes "in the strategy, behavior, and organization inside of firms ." is necessary to fully understand changes in skill demand and job quality.

2. From an organizational as well as an economic perspective, this represents a significant shift in theory about the functions of the firm as an organizational unit. It would suggest that the firm as an organizational form no longer provides the necessary efficiency, reliability, and accountability that is the foundation of organizations (e.g., Hannan and Carrol, 1995). Such a conclusion seems to be inferred from macrolevel analyses but requires a microlevel analysis of changes in the internal functioning of firms, of changes in the rationale and legitimacy of the traditional organizational form of the firm, and of whether this represents changes in the core functions of the firm organization.

3. There has been some discussion in the U.S. about "skill development" and education as differentiated from "training." Carnevale and Desrochers (1997), for example, note that employer-based training "has less durability than broader educational preparation," and that it "tends to lose its economic value and transferability over time." King (1996) discussed the long-term implications of skill development versus more narrowly targeted training, and the value of the former for building workforce skill that can provide longer-term competitive advantage to firms and provide the skill base for workers to adapt to technology and other changes without extensive retraining. Studies also show that education has higher payoff over the long term and that ROI studies tend to focus only on short-term returns (e.g., Lynch, 1994). Support for these positions is suggested by observations that Germany is able to maintain one of the world's highest-skilled workforces with the highest training rates for workers ages 20 to 24 but the lowest rate of training for incumbent workers in the industrialized countries (Lynch, 1994). Further, Lynch's findings suggest that countries with training expenditures for incumbent workers such as the U.S., where there is a comparatively weak underlying base of skills and education, do not achieve the same levels of skill quality as countries that spend less on training but have better initial skill development; that is, the evidence suggests there is a weak contribution of high levels of incumbent worker training without a deeper foundation of skill development.

4. The role of "education" in this system is perhaps best epitomized by Ford's "sociology department," which often worked outside of the workplace to instill good work habits and increase acculturation of the immigrant workforce and their families while engineers and managers within the plant worked to design a production process that could operate with low levels of workforce skill.

5. For example, Kalleberg and Knoke's (1994) analysis suggests that the often-identified determinants of training such as organizational size, unionization, and workforce composition, are not supported in more complex multivariate models. Although they suggest that incidence of training is related to establishments with elaborate internal structures and complex market environments, they also note that current studies are not able to disentangle the causal relationships such that some of the independent variables might, in fact, be dependent through an interactive process of determination (cf. analyses of interactions or recursive relationships between structure and action in organizations, e.g., Ortmann, 1995; Barley, 1986, on work process and organizations). An organizational analysis, as suggested by Scott and Meyer (1994), would identify an alternative dynamic consistent with weak links in the standard economic/productivity determinant analysis. Organizational and field studies could address issues about the interaction between skills development, job structures, and market strategies of firms.

6. Employment growth for employees of insurance carriers declined from 2.7 percent annual growth between 1982 and 1987 to 1.1 percent from 1987 to 1992 down to 0.2 percent from 1992 to 1996. Average annual growth is projected to be 1.2 percent in this sector between 1996 and 2006. For the wage and salary category of insurance agents and brokers (which excludes the self-employed and unpaid family), employment growth declined from 4.7 percent annual growth between 1982 and 1987 to 1.4 percent between 1987 and 1992 and increased to 1.9 percent from 1992 to 1996. Average annual growth is projected to be 0.9 percent in this sector between 1996 and 2006 (Bureau of Labor Statistics, 1997). Related to these changes, merger and acquisition activity doubled from $12.5 billion in 1994 to $27 billion in 1995 (Standard and Poor's, 1996).

7. We were told, for example, of one or two people in a group that were not comfortable using the computer. In a few cases this was noted as a factor in the person being laid off during a reorganization. But even then inflexibility with making a number of changes and/or lack of basic skills was also an issue in these cases. In any event, these cases comprised a very small number of the layoffs in the firm (e.g., 1 or 2 of perhaps 10 to 20 layoffs in an area).

8. This change in hiring level would imply an increase in labor costs given higher premiums for college-educated workers. However, the companies interviewed said they were not paying significantly more in labor costs than in the past. Two potential explanations are that the existing non–college educated workforce was more senior and thus earning comparable pay as new college educated entrants and that although the wage differential has increased it is because of a decline in real wages of non–college educated entrants while college-level entrant wages have remained flat. Thus, current college-educated entrants are earning wages comparable to the real wages of non–college educated workers of previous cohorts.

Bibliography

American Management Association. 1996. *1996 AMA Survey on Downsizing, Job Elimination, and Job Creation*. New York: American Management Association.

Bailey, T., K. Hughes, and T. Barr. 1998. "Achieving Scale and Quality in School-to-Work Internships: Findings from an employer survey (MDS-902)." Berkeley: National Center for Research in Vocational Education, University of California.

Barley, Stephen. 1986. "Technology as an Occasion for Structuring." *Administrative Science Quarterly* 31: 78-108.

Bartlett, Christopher A., and Sumantra Ghoshal. 1993. "Beyond the M-Form: Toward a Managerial Theory of the Firm." *Strategic Management Journal* 14: 23–46.

Bassi, Laurie J., and Mark E. Van Buren. 1998. "The 1998 ASTD State of the Industry Report." *Training and Development* 52(1): 21-44.

Berman, Eli, John Bound, and Zvi Grilches. 1994. "Changes in the Demand for Skilled Labor within US Manufacturing: Evidence from the Annual Survey of Manufactures." *Quarterly Journal of Economics* 109(2): 367-397.

Bettis, Richard A., Stephen P. Bradley, and Gary Hamel. 1992. "Outsourcing and Industrial Decline." *Academy of Management Executive* 6(1): 7–22.

Buechtemann, Christoph F., and Kurt-Vogler Ludwig. 1996. *The German Model Under Pressure*. Santa Barbara: Center for Research on Innovation & Society. Report #E96-05.

Bureau of Labor Statistics. 1997. Office of Employment Projections. Unpublished Tables.

Cappelli, Peter, Laruie Basswi, Hary Katz, David Knoke, Paul Osterman, and Michael Useem. 1997. *Change at Work*. New York: Oxford University Press.

Carnevale, Anthony P., and Donna M. Desrochers. 1997. *Employer Training: The High Road, the Low Road, and the Muddy Middle Path*. Paper for the Conference on Restoring Broadly Shared Prosperity. Economic Policy Institute and Lyndon B. Johnson School of Public Affairs, University of Texas-Austin. May.

Coase, Ronald H. 1937. "The Nature of the Firm." *Economica* 4.

Davis, Gerald F., Kristina A. Diekman, and Catherine H. Tinsley. 1994. "The Decline and Fall of the Conglomeration Firm in the 1980s: Deinstitutionalization of an Organizational Form." *American Sociological Review* 59(4): 547-70.

DiMaggio, P., and W.W. Powell. 1983. "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." *American Sociological Review* 48: 147–160.

Doeringer, Peter B., et al. 1991. *Turbulence in the American Workplace*. New York: Oxford University Press.

Farber, Henry S. 1996. *The Changing Face of Job Loss in the United States, 1981-1993*. Princeton: Princeton University, Industrial Relations Section. Working Paper No. 360.

Frazis, Harley J., Diane E. Herz, and Michael W. Horrigan. 1995. "Employer Provided Training: Results from a New Survey." *Monthly Labor Review* (May): 3–17.

Gumport, Patricia J. and Brian Pusser. 1997. "Restructuring the Academic Environment." In *Planning and Management for a Changing Environment*, edited by Marvin W. Peterson, David D. Dill, Lisa A. Mets and Associates. San Francisco: Jossey-Bass.

Hamilton, Stephen F. and Mary Agnes Hamilton. 1997. "When Is Learning Work-Based?" *Phi Delta Kappan* 78(May): 677-681.

Hannan, Michael T., and Glenn R. Carroll. 1995. "An Introduction to Organizational Ecology." In *Organizations in Industry*, edited by Glenn R. Carroll and Michael T. Hannan. New York: Oxford University Press.

Harrison, Bennet. 1994. *Lean and Mean: The Changing Landscape of Corporate Power in the Age of Flexibility*. New York: Basic Books.

Holzer, Harry J. 1996. *What Employers Want: Job Prospects for Less Educated Workers*. New York: Russell Sage Foundation.

Howell, David R. 1997. *Institutional Failure and the American Worker: The Collapse of Low-Skill Wages*. Annandale-on-Hudson, NY: The Jerome Levy Economics Institute. Public Policy Brief No. 29.

Howell, David R., and E.N. Wolff. 1991. "Trends in Growth and Distribution of Skills in the U.S. Workplace, 1960-1985." *Industrial Labor Relations Review* 44: 486–502.

Jarillo, J.C. 1993. *Strategic Networks*. London: Butterworth Heinemann.

Kalleberg, Arne L., and David Knoke. 1994. "Job Training in U.S. Organizations." *American Sociological Review* (August): 537–546.

King, Jeffrey. 1996. *Post-Taylorization or Re-Taylorization: Outsourcing Skills in the World Knowledge Economy*. Paper for symposium on The Future of Training and Vocational Education in the Global Economy, Hannover, Germany. October.

Kochan, Thomas A., and Michael Useem (eds.). 1992. *Transforming Organizations*. New York: Oxford University Press.

Lazonick, William, and Mary O'Sullivan. 1997. "Investment in Innovation, Corporate Governance, and Corporate Employment." Jerome Levy Economics Institute Policy Brief No. 37.

Lerman, Robert I. 1997. "Reassessing Trends in U.S. Earnings Inequality." *Monthly Labor Review* 120(12).

Luria, Daniel. 1997. "The Public Purpose in a High Road Manufacturing Workforce." *Community College Journal* 67(6).

Lynch, Lisa M. 1992. "Using Human Resources in Skill Training: The Role of Training." In *Transforming Organizations*, edited by Thomas A. Kochan and Michael Useem. New York: Oxford University Press.

Lynch, Lisa M. 1994. "Payoffs to Alternative Training Strategies at Work." In *Working Under Different Rules*, edited by Richard B. Freeman. New York: Russell Sage Foundation.

Lynch, Lisa M., William L. Clayton, and Sandra E. Black. 1996. *Beyond the Incidence of Training: Evidence from a National Employer Survey*. Philadelphia: National Center on the Educational Quality of the Workforce. Working Paper No. 35.

Moss, Philip. 1997. *Earnings Inequality and the Quality of Jobs: The Status of Current Research, and Proposals for an Expanded Research Agenda*. Annandale-on-Hudson, NY: The Jerome Levy Economics Institute. Working Paper No. 198.

Moss, Philip, and Chris Tilly. 1996. *Growing Demand for "Soft" Skills in Four Industries: Evidence from In-Depth Employer Interviews*. New York: Russell Sage Foundation. Working Paper No. 93.

Moss, Philip, Harold Salzman, and Chris Tilly. 1998. "Rising from the Ashes? The Reconstruction of Internal Labor Markets in the Wake of Corporate Restructuring." Paper presented at the National Bureau of Economic Research Summer Institute, July 29, 1998.

Murnane, Richard J., and Frank Levy. 1997. *Teaching the New Basic Skills*.New York: The Free Press.

National Center on the Educational Quality of the Workforce. 1995. *The Other Shoe: Education's Contribution to the Productivity of Establishments*. Philadelphia: EQW.

Ortmann, Günther. 1995. *Formen der Produktion. Organisation und Rekursivität*. Opladen: Westdeutscher Verlag.

Porter, Michael E. 1996. "What is Strategy?" *Harvard Business Review* 74(6): 61–78.

Powell, Walter W. 1990. "Neither Market nor Hierarchy: Network Forms of Organization." In *Research in Organizational Behavior*, edited by Barry M. Staw and L.L. Cummings. Greenwich, CT: JAI Press. 12: 295–335.

Salzman, Harold. 1992. "Technology Design and Productivity, Skill, and Quality of Worklife." In *Usability: Turning Technology into Tools*, edited by Terry Winnograd and Paul Adler. New York: Oxford University Press.

Salzman, Harold. 1998. "Restructuring and Skill Needs: Will Firms Train?" *The Annals of the American Academy of Political and Social Science* 559(September): 125-140.

Salzman, Harold, and Stephen Rosenthal. 1994. *Software by Design: Shaping Technology and the Workplace*. New York: Oxford University Press.

Scott, W. Richard, and John W. Meyer. 1994. "The Rise of Training Programs in Firms and Agencies." In *Institutional Environments and Organizations: Structural Complexity and Individualism*, by W.R. Scott, John W. Meyer, et al. Thousand Oaks, CA: Sage Publications.

Standard & Poor's. 1996. Property-Casualty Insurance Survey. October 24.

Stasz, Cathleen. 1996. *The Economic Imperative behind School Reform: A Review of the Literature*. Berkeley: National Center for Research in Vocational Education. Working Paper.

Streeck, Wolfgang. 1991. "On the Institutional Conditions of Diversified Quality Production." In *Beyond Keynesianism The Socio-Economics of Production and Full Employment*, edited by Egon Matzner and Wolfgang Streeck. Brookfield, VT: Edward Elgar Publishing.

Tilly, Chris, and Michael Handel. 1997. *The Diagnostic Imaging Equipment Industry: What Prognosis for Good Jobs?* Lowell, MA: Center for Industrial Competitiveness, University of Massachusetts, Lowell. Draft.

Useem, Michael. 1993. *Executive Defense: Shareholder Power and Corporate Reorganization*. Cambridge, MA: Harvard University Press.

Useem, Michael. 1996. "Corporate Education and Training." In *The American Corporation Today*, edited by Carl Kaysen. New York: Oxford University Press.

Williamson, Oliver E. 1975. *Markets and Hierarchies: Analysis and Antitrust Implications.* New York: The Free Press.

Williamson, Oliver E. 1985. *The Economic Institutions of Capitalism.* New York: The Free Press.

Zemsky, Robert. 1998. "Labor, Markets and Educational Restructuring." *The Annals of the American Academy of Political and Social Science* 559(September): 77-90.